

Service capabilities for UPS

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Uninterruptible Power Supplies, UPS equipment is used to maintain service to critical loads and improve uptime. Proper maintenance of the UPS should provide the owner with an Uninterrupted Revenue Stream, lower capital expenditures and lower long-term maintenance cost.

Let's take a look at what "Service" is available to maintain the UPS. We will do this in two parts. First will be an overview and a look at best practices for UPS service and the second will be GE's offering to accomplish this.

Part I - Overview

Many factors affect the performance of the UPS, as is the case with electronic equipment. Preventive Maintenance visits can proactively capture any weakness or potential component failure.

The following checks should be performed:

1. Parameter review and confirmation.
2. Infrared scan of components.
3. Voltage readings (Input, Output, and Bypass)
4. Review of alarm history.
5. Review and cleaning inside cabinet.
6. Review and correction of cable and component connections.

A log should be kept of measurements taken and any service notes so any decline in system or component performance can be identified and corrected.

What to Service

Let's look at the UPS and these checks in a little more detail. See Figure One for the location of the following components.

System

Includes items shown plus the cabinet, cooling components, etc

- Proper fan operation
- Clean the interior of the system
- Check internal connections for proper torque
- Perform thermal scan of all breakers and power connections

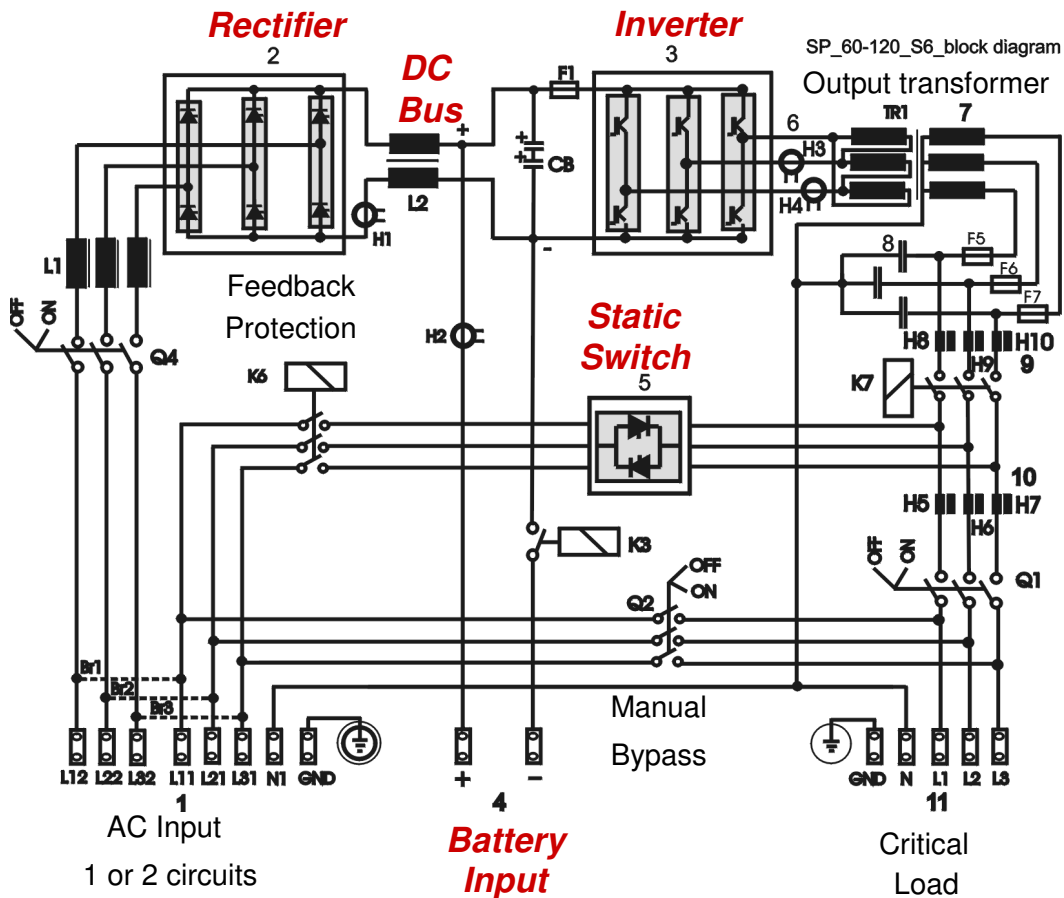


Figure 1 (Simplified UPS Schematic, True on-line, double conversion with isolation transformer)

Rectifier

The rectifier converts the available AC input power to DC.

- Record input/output voltage and currents
- Verify proper float and equalize settings for installed battery plant
- Verify AC ripple voltage is within tolerance on the filtered DC bus
- Verify system alignments are within factory specifications

Batteries

The batteries provide power during loss of power and if voltage and/or frequency are out of acceptable range. Batteries can be remote as shown or internal.

- Ambient room temperature, and cabinet temperature
- Millivolt readings for each battery
- Conductance readings for each battery
- DC voltage of each battery

Inverter

The Inverter converts the DC from the rectifier (or batteries if the AC input is not available) to AC for the load being served.

- Record input/output voltage and currents
- Verify proper operation of inverter
- Verify system alignments are within factory specifications
- Verify DC currents on output of each inverter power stage

Static Switch

The Static Switch (Also called Automatic Bypass) transfers power during an overload or failure of the Rectifier, DC Bus or Inverter.

- Record inverter input voltage and currents to static switch
- Record bypass input voltage and currents to static switch
- Record static switch output voltages and currents
- Verify proper operation of static switch
- Verify system alignments are within factory specifications

Power Supplies

Internal power supplies for control, not shown.

- Verify proper output voltage of each internal power supply
- Check for proper filtering of power supply output voltage
- Confirm power supply redundancy if applicable
- Adjust power supply output levels as required

When to service

The first service is required when the UPS is installed. Startup is UPS commissioning and battery installation. A checklist is provided before scheduling startup service to be sure the UPS and the site are ready for the UPS to be energized. The checklist should be returned to the service provider before confirming the service date; this step assures smooth commissioning and avoids extra cost resulting from possible additional site visits being required.

Preventive Maintenance is scheduled checks on critical components of the system. The UPS should be checked once or twice per year after startup, depending on the critical nature of the load served, age of UPS and site history.

Preventive Maintenance Service can be ordered and scheduled for each visit or a service contract can be put in place. The service contract provides the same checks but can include cost of labor and/or parts to make necessary repairs identified during the inspection and can speed service response time should the UPS fail as all required information is on file. Proactive contract orders can also alleviate the possible expenditure of thousands in parts and repairs.

Part II – GE’s Offering

Now we will take a brief look at GE’s offering for these services, “GE Global Services.” This is intended to not only identify GE’s capabilities but also help the customer identify service requirements for their site.

History

GE acquired Power Maintenance International (PMI), the largest multi-vendor service business in the critical power protection industry, in July of 2001. Through this acquisition, GE has created a new business known as GE Global Services.

Offering

GE Global Services specializes in the preventive and remedial maintenance services of Uninterruptible Power Supply (UPS) systems, stationary battery systems, and battery chargers. In addition to our outstanding services, GE Global Services offers UPS and battery sales, as well as thermographic inspection services.

Availability

1 Number to call 24/7/365 - [800 637-1738](tel:8006371738)*

*Choose option # 3 to speak with someone immediately during normal business hours 8:00 AM to 4:30 PM Central time

*Choose option # 7 to speak with someone immediately during non-standard business hours 4:30PM to 8:00 AM Central time

Location

GE has Global presence with its service organization. Call 800 637-1738 or use the Web to find the Service Center or Field Service Engineer near you.

Online go to www.geindustrial.com/wtb/Dispatcher

Click on the world map to select your “Region”.

Select your market, Industrial, Commercial, etc.

Click the services button.

Pick Uninterruptible Power Supplies (UPS) Services

Enter zip code or City and State and distance button.

Click search – to see a list of the Service Centers or Field Service Engineers near you.

Critical Parts Availability

- Operating from a worldwide network of service centers
- Worldwide critical spare parts inventory and servicing
- Continually updated database for most efficient sourcing

Multi-Vendor Services

GE Global Services is the source for comprehensive maintenance agreements. Whether you have one Uninterruptible Power Supply (UPS) unit or numerous installed units from different manufacturers, the Global Service's field engineers are trained to maintain most major manufacturers' products with a high level of quality and expertise.

Some parting thoughts

We have identified the type of service required to avoid potential loss of revenue streams from unplanned outages. The owner must decide if this service will be ordered on a per visit basis or with a planned service agreement. Furthermore the owner must decide how comprehensive the service agreement will be. Making the service agreement more comprehensive increases the upfront cost but reduces the owner's exposure to high repair costs. The following are some options:

- Discount on any parts purchased and installed during inspection.
- Discount on labor used to perform repairs during inspection.
- Cost of any parts and labor required during inspection included.
- Batteries have a 3-5 year life. The cost of batteries is not included unless specifically detailed in the Service Agreement.

REFERENCES

DEA-387 Uninterruptible Power Supply (UPS)

GEP-1100 BuyLog

GE Digital Energy Web Site www.gedigitalenergy.com